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Tolulope E. Adenekan

Babcock University, Ilishan-Remo, Ogun State, lizzyadenekan@yahoo.com

Yacob Haliso

Babcock University, Ilishan-Remo, Ogun State, halisoy@babcock.edu.ng

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Role of Government in the Provision of Information System and Services in Nigeria

1. Introduction

The pursuit of effective information systems and services use in the public sector will necessitate enormous investments by public and private sectors in physical infrastructure, equipment, and training as well as a substantial planning and implementation effort (UN, 1985). It is important that these investments and efforts be guided by a well-structured and understood strategy which establishes priorities and an action plan for the short, medium and long term. Information system is a potentially powerful tool within a dynamic organizational structure. In order to effectively use it, governments should improve the organizational environment in their agencies, consider the consequences with respect to the role of professional staff, remove legal obstacles when applicable, and adopt a realistic attitude to other types of constraints arising from cultural, historical, economic and political issues.

This paper aims to explore the role of government in providing the information system and services to participate in an information society. It tends to properly educate and orientate Nigerians about the challenges that may be associated with the provision of information system and services. The information system components now include a significant service component; Information system had always come up with a service role, because they assist users in converting data to information needed to make informed decisions in everyday life. To appropriately discuss the above, this paper is divided into five segments: The first segment is the introduction into the paper. The second segment concisely describes an information society. The third segment discusses the information systems and information services. The fourth segment reveals the main theme of the work; the role of government in the provision of information system and services to different sectors. The fifth segment renders the conclusion and recommendations for government to adopt to enable them provide adequate information system and also enlighten the citizens of Nigeria on their obligation to cooperate with the government.

2. Information Society

Approaching the end of the twentieth century, societies all over the world are changing. Just as good land is a decisive factor for the agrarian economy, capital for the industrial economy, existing knowledge is a decisive factor for the information economy (Stonier 1983). The relationship between these factors is not simply parallel, but progressive. The implication of the recent information revolution lies in the fact that it is designed to eliminate the shortage of knowledge by processing data and information. It is characterized by the (1) pervasive influence of IT on home, work, and recreational aspects of the individuals' daily routine, (2) stratification into new classes those who are information-rich and those who are information-poor, (3) loosening of the nation state's hold on the lives of individuals and the rise of highly sophisticated criminals who can steal identities and vast sums of money through information related (cyber) crime (Stonier 1983). Accumulation of information contributes greatly to social transformation. Digital information has become the decisive innovative factor in economic development and the leading resource in contemporary civilization (Molitor 1982, Fisher 1984, Rabin and Jackowski (eds) 1988; Daler and co-workers 1989).

An information society is one that makes the best possible use of ICTs. Surviving in the information age/society depends on access to national and global information networks. ICTs are the bedrock for the survival and development of any nation in a rapidly changing global environment, and it challenges us to devise initiatives to address a host of issues such as reliable infrastructure, skilled human resources, open government, and other essential issues of capacity building (Federal Republic of Nigeria, 2001). Martin (1995) supports this view by describing it as a society in which the quality of life, as well as prospects for social change and economic development, depends increasingly upon information and its exploitation. In such a society, living standards, patterns of work and leisure, the education system, and marketplace are all influenced by advances in information and knowledge. This is evidenced by an increasing array of information intensive products and services (Martin, 1988). Annan (2002) noted that the information society is a way for human capacity to be expanded, built-up, nourished, and liberated by giving people access to tools and technologies, with the education and training to use them effectively. There is a unique opportunity to connect and assist those living in the poorest and most isolated regions of the world. Informatization of society is a major hurdle that most nations, especially developing countries, are encountering. The information society or information age brings challenges as we seek to integrate and expand the universe of print and multimedia sources. The two terms are often used to describe a cybernetic society in which there is a great dependence on the use of computers and data transmission linkages to generate and transmit information (Bruce, 1995).

The African Information Society (AIS) document (2005) argues that Africa should build an information society in which every man, woman, child, village, public and private sector office has secured access to the use of computers and telecommunications media. The objective is to provide every African with the possibility of using the communication and data processing services available everywhere else, just like any other citizens of the world.

3 Information Systems

An information system is any combination of information technology and people's activities using that technology to support operations, management and decision making. It is frequently used to refer to the interaction between people, algorithmic processes, data and technology. Information systems have become the backbone of most organizations. Banks could not process payments, governments could not collect taxes, hospitals could not treat patients, and supermarkets could not stock their shelves without the support of information systems. In almost every sector—education, finance, government, health care, manufacturing, and businesses large and small—information systems play a prominent role. Every day work, communication, information gathering, and decision making all rely on information technology (IT). When we visit a travel agency to book a trip, a collection of interconnected information systems is used for checking the availability of flights and hotels and for booking them. When we make an electronic payment, we interact with the bank's information system rather than with personnel of the bank. Organizations offer products to customers to make money. These products can be goods or services. In most organizations, huge volumes of data accumulate: data of products, data of customers, data of employees, data of the delivery of products, and data of other sources. These data therefore play an important role in contemporary organizations and must be stored, managed, and processed, which is where information systems come into play.

Alter's framework for information systems (Alter 2002) in figure 1.1 shows an integrated view of an information system encompassing six entities: customers, products (and services), business processes, participants, information, and technology. Customers are the actors that interact with the

information system through the exchange of products or services. These products are being manufactured or assembled in business processes that use participants, information, and technology. Participants are the people who do the work. Information may range from information about customers to information about products and business processes. Business processes use technology, and new technologies may enable new ways of doing work. Customers and participants are examples of *agents*. As figure 1.1 shows, business processes play a central role in larger information systems. A business process describes the flow of work within an organization. (Weske 2007).

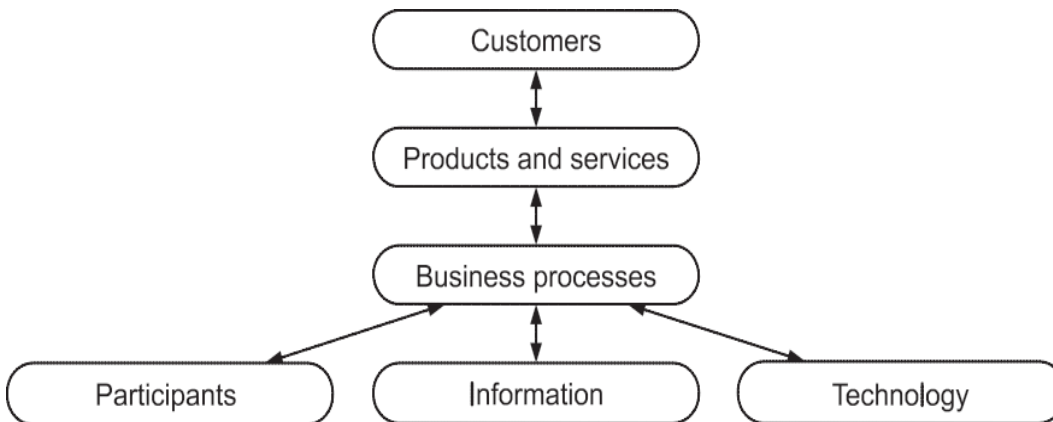


Figure 1.1: An integrated view of an information system.

Classifying Information Systems

It is ambitious to classify the many types of information systems that have emerged in practice. Many classifications for information systems exist in the literature; see classifications by Alter (2002), Dumas, Van der Aalst, and Ter Hofstede (2005), and Olivé (2007), for instance. The problem is that classification is in flux; that is, a classification developed a few years ago is not necessarily current. As another and main limiting factor, the categories of a classification are typically not disjointed: one type of information system belongs to multiple categories. Given these problems, there are three classes of information systems.

The first class of information systems is personal information systems. Such an information system can manage and store information for a private person. Examples are an address book or address database and an audio CD collection.

Enterprise (or organizational) information systems are the second class of information systems. An enterprise information system is tailored toward the support of an organization. In this aspect, there is difference between *generic* types and technologies of information systems and information systems for *certain* types of organizations. The former class of enterprise information systems supports functionality that can be used by a wide range of organizations. Examples are workflow management systems, enterprise resource planning systems, data warehouse systems, and geographic information systems. In contrast, information systems for certain types of organizations offer functionality that is tailored toward certain industries or organizations. Examples are hospital information systems, airline reservation systems, and electronic learning systems.

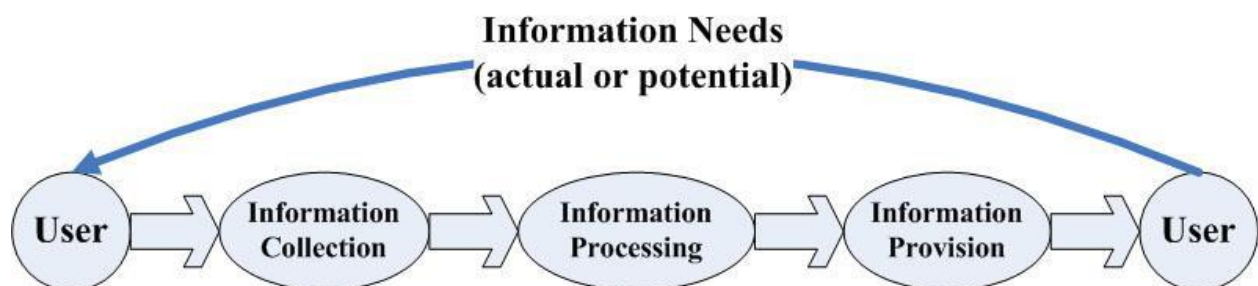
The third class of information systems is public information systems. Orman (1989) defines public information system as systems designed for use by the general public, rather than specialists in a particular field or organization. Unlike personal information systems, public information systems can manage and store information that can be accessed by a community. Public libraries, information systems for museums, Web-based community information systems and Web-based stock-portfolio

information systems are examples of public information systems (Orman,1989). The purpose of a public information system is to provide some kind of service or support to a public process, or process involving the general public or society at large (Sundgren 2005). The actors involved in a public information system will usually be citizens/clients/customers, business companies and other types of organisations and the government agencies on different levels (Federal, State, Local) (Sundgren 2005).

4. Information Services

Information services refer to the act of providing processed or published information on specific topics to an organization's internal users, its customers, or the general public (Stonier, 1983). It is a common name for an organization within an enterprise that is responsible for its data processing and information system or systems. An information service is this part of an information system that serves data/knowledge/information to customers and collects it from its contributors, to manage and store it by optionally using administrators. The social and economic contributions made by information services usually go unnoticed. As this paper reveals, they add significant value to the scientific research process, as well as increasing cultural awareness within society as a whole and enhancing individuals' professional skills. Libraries, Archives, Information and documentation centres maintained by public authorities reinforce legal certainty, make available historic archives that if not described and catalogued would be useless to researchers and the general public, and keep corporate know-how up to date so that it can be used to competitive advantage by members of staff. However, as these contributions all form part of products and services provided by other professionals, it could perhaps be said that documentation's value only becomes evident when it is absent. Information Services is to provide value-added information. It finds its way into other industries and realizes its value there.

Information and communication technologies (ICTs)infrastructure is needed to form the base for good information services in libraries and information centres, and increasingly, these organizations have converted to integrated library systems in order to manage and make their collections available for national development (Stiwell, 2012). He further stresses that Information service organizations are driven by the needs and demands of the clients that are increasingly becoming dependent upon technological solutions. In this competitive world, information service organizations and professional leaders need reliable and timely information in order to implement solutions that are cost effective in service delivery (Ejedafiru, 2010). Effective and efficient management of information resources in organizations is one of the modern International Standards Organization (ISO) requirements for knowledge management practices meant to enhance and improve provision of quality services to the customers. The image of the library is increasingly being measured by the services offered in terms of helping clients to access universal information rather than the respective collection (Ejedafiru, 2010).



The general trend in our times toward increasing intervention by the state in economic affairs has led to a concentration of attention and dispute on the areas where new intervention is proposed and to an acceptance of whatever intervention has so far occurred as natural and unchangeable. The current pause, perhaps reversal, in the trend toward collectivism offers an opportunity to reexamine the existing activities of government and to make a fresh assessment of the activities that are and those that are not justified. The role assigned to government in any particular field depends, of course, on the principles accepted for the organization of society in general.

a. Educational Sector

- The general trend in our times toward increasing intervention by the state in economic affairs has led to a concentration of attention and dispute on the areas where new intervention is proposed and to an acceptance of whatever intervention has so far occurred as natural and unchangeable.
- Role of government in the provision of information systems and services that will provide basic education and supporting services (different types of libraries and information centres)

b. Commercial/Industrial Sector

- The Internet has created a banquet of opportunities and challenges for society in general, and for business and the related professional communities of law and accounting. At the same time as the Internet has facilitated international communication and business relationships, it has created the potential for unprecedented conflict between legal systems.
- If we accept the idea that some degree of rule making is necessary, where does one start?
- Some of the reasons for passing laws are:
 - to recognize personal freedoms, private contracts and sanctity of ownership of property;
 - to regulate taxation;
 - to encourage certain activities, like the creation of intellectual property by the granting of statutory monopolies;
 - to prohibit certain conduct and provide sanctions; and
 - to provide a dispute resolution mechanism, including laws and a forum to apply them.
- Role of government in the provision of information systems and services that will give them an enabling environment to operate
- (different types of libraries and information centres)

c. Health Sector

- *Modern health care systems need health information technology (HIT), including electronic health record systems, to perform to their full potential.*
- *Getting doctors and hospitals to adopt HIT, however, will require overcoming a host of financial, technical, and logistical obstacles.*
- *Through the power of policy making, there are a number of actions the federal government can take to ease providers' fears and help pave the way.*

To increase the effective use of electronic health systems, private and public agencies and groups must accomplish, at a minimum, the following tasks:

- Get doctors, hospitals, and other health care providers to acquire and use electronic health records.
- Get those electronic health records to "talk to one another" by becoming interoperable.
- Get providers to use EHRs to improve quality and efficiency in the provision of health care services.

d. Agricultural Sector

- The important role of technology to promote sustainable agriculture and rural development cannot be underestimated in view of the needs within the agriculture sector often dominated by the highly differentiated small holder farming systems.
- Agricultural research and development budgets are very low in most developing countries within the region except in China and India (with R & D expenditures of US \$ 330 million in 1997 and US \$ 500 million in 1994 respectively).
- Government institutions need a major shift in attitude in favour of use of local knowledge for improved productivity in local food crop production, water conservation, soil improvement, etc and develop demand driven new farm technologies in partnership with the local communities and small farmers.
- *Government facilitation of small farmers' participation in decision-making on priorities and budget allocation for agricultural research and extension activities is of equal importance as collaboration with the private enterprises in high-end biotechnology research.*

In developing workable information policies suited to the country's political climate, administrative context, and cultural and legal traditions, decision makers should keep in mind that greater openness of the administration can contribute to democratic legitimacy and to societal support for democratic institution. The government have the following enormous role to play;

Vision and Mission Development: The Government department is responsible for seizing the opportunity of technology to deliver on a vision of availability and access to ICT and the information systems needed through public libraries, institutional libraries and other information centres.

Driver of the Vision: Serve as the central driver of information and communications technology strategy, programmes and initiatives in Nigeria by performing the under listed functions.

- Deliver and manage the execution of programmes related to the implementation of information technology and related systems in government with the aim of enhancing public service delivery.
- Provide efficient and effective information and communications technology infrastructure services to citizens through its key stakeholders from time to time.
- Proliferate further application and take-up of information and communications technologies in society and economy.
- Promote and deliver programmes aimed at enhancing ICT education and the use of ICT as a learning tool.

Proactive Approaches: When government shows a positive look to the information professionals, information services rendered will also improve. Government should ensure that strategies are in place for meeting the current challenges to providing information services starting from their responsibility to correct the prevailing unhealthy state of information practice, which is predominantly passive or reactive. Government must appreciate the fact that the prestige enjoyed by professions like law, engineering, medicine and accounting did not come by chance but as a definite product of proactive toils and sweat of successive generations of professionals in those other fields. The prestige which society accords any profession reflects the value which, in the society's opinion,

the government delivers to it in form of qualitative, indispensable service. Therefore, must cease to be a mere product of professional chores and reflect the needs of the target user groups. Such proactive approaches can assume various dimensions. The dimensions include:

a. Diagnosis and customization

Government can encourage information professionals, like physicians or any other professionals, to diagnose the information needs, plan and then implement the service which meets these needs. They should evaluate performance periodically in the light of the needs in order to take any necessary corrective measures and ensure the needs of the user groups are being met adequately by the services rendered.

b. Research into Professional Education and Practice

There is need for government to invest into continuous research into various aspects of professional practice in order to develop a formidable theoretical and knowledge base for the profession. Most of the research in information services today is said to be uneven in quality and weak in terms of methodology. Such areas of professional activity in need of researching into include: collection development, cataloguing & classification, reference service, user education and the value of the research done based upon experienced evidence of its use toward improving practice.

c. Visibility of Library and Information Professionals

There is relative obscurity, and consequent obvious lack of prioritization of library and information services, in the country. This situation calls for urgent measures to enhance the visibility of library and information professionals and services. Such measures include: active participation of professionals in politics, and promotion activities, like media encounters, publicity for services, and professional activities at local and international levels,

d. Improved Planning

Government should ensure they invest in Planning for the provision of information services and systems must be done strategically. It must also exhibit innovation and creativity, taking into account not only existing needs but also anticipated future requirements associated with growth and increasing modernization. These considerations relate to all aspects concerning the services -staffing, information sources, infrastructure and funding.

User Education: Government should ensure that every information services and systems must plan and implement appropriate user education strategies for its users. This will help to address the problem of poor information literacy among the user communities and promote demand for, and effective use of, the library and information services provided.

Cooperation: information services and systems organizations need to pool their resources together in form of consortia and networks to guarantee mutual exploitation of their resources, and access to resources that may not be held in their collections. These can effectively happen if government assist in building the required network structure expected for such cooperation.

Improved funding: Funding is a fundamental requirement without which information services and systems organization cannot provide the requisite staff, information resources, infrastructure and overhead cost. Adequate funding is therefore an overriding imperative for any meaningful provision of information services.

Integration into Development Programmes & Services: One way of boosting and thus overcoming the challenges to providing library and information services in Nigeria is to integrate such services with the various development programmes and services. Ready examples are: the United Nation's Millennium Development Goals (UN MDGs), World Bank Loans, National Development Plans, the Education Trust Fund (ETF), etc.

5. Conclusion and Recommendations

This paper has discussed the Information society, Information systems and services in relation with availability and accessibility of information by all citizens of the country. The government/public authorities and their agencies was discussed. The role of the government in the provision of information systems and services to the various public sectors were highlighted and discussed concisely. This paper has confirmed that the government have a numerous and optimal role to play to lead the current revolution of an information society. It further discusses the workable information policies to be prepared and some proactive approaches recommended for the government to perform their roles efficiently

This paper recommends firstly that the government should promote universal access to ICT by giving every citizen the opportunity of basic education, ICT education and providing the information systems (i.e infrastructure for connectivity and access) for adapting to the use of ICT. Secondly, since development in Nigeria depends on its capacity to create wealth to significantly reduce poverty and to raise its capacity to create wealth at a sustainable level, the government should take a lead in adopting the proposed five development indicators that focused on the improvement of the quality of life: education, health, income, governance, and technology as suggested in June 1996 by the United Nations Commission on Science and Technology Development (UNCSTD) in collaboration with IDRC (Crede and Mansell, 1998). If the government consider these five key indicators of development for Nigeria, ICTs can be socially beneficial by contributing to poverty eradication (higher income), improved health and education, better use and more equitable sharing of resources, and raising participation in the decision-making processes and in this regard, access to information is must be guaranteed. Thirdly, the government in collaboration with the information service organizations and professionals should ensure that reliable and timely information needed to implement solutions that are cost effective in service delivery is provided as effective and efficient management of information resources in organizations is one of the modern International Standards Organization (ISO) requirements for knowledge management practices meant to enhance and improve provision of quality services to the customers. Fourthly, the government should customize access to information for people who are physically challenged; refugees; women in purdah; the mentally challenged; illiterates; etc. It is necessary to identify the information user communities to diagnose/analyze their information needs and customize the library and information services provided for them. Fifthly, Since the government directly influences the lives of the people under its control, they should provide or review laws and information policies that ensure free flow of information among people, and also enforcing the laws and information policies by attaching penalties for breaking those laws. The government should also **take** advantage of ICTs to facilitate citizen's access to government information services in order to support social, economic and political development, improve the quality of public services and provide avenue for citizens to interact with government institutions and processes in a democratic, transparent and equitable way. To achieve this, strategies to enhance existing information infrastructure in terms of funding, access to computing and internet services and equipping citizens with skills to use them, should be put in place. Lastly, the government should adopt the undertaking of the roles stated above and implement effectively the proactive approaches therein.

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